

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. **(Currently Amended)** A method of processing nonferrous metal alloy, comprising:

~~heating the nonferrous metal alloy with a liquid metal sodium at a first temperature to put the nonferrous metal alloy in a solid solution state; and~~

~~cooling the nonferrous metal alloy with a liquid metal sodium at a second temperature to suppress growth of a Guinier-Preston (GP) zone in the nonferrous metal alloy while in the solid solution state~~

(a) heating the nonferrous metal alloy to between 450 degree C and 530 degree C by a first liquid metal sodium such that the nonferrous metal alloy is put in a solid solution state and so as to generate a lattice effect in the nonferrous metal alloy caused by transition in the crystal structure of the nonferrous metal alloy;

(b) after the heating step, cooling the nonferrous metal alloy with a second liquid metal sodium set to a temperature of less than 200 degree C, wherein the cooling step is adapted to suppress growth of a Guinier-Preston (GP) zone in the nonferrous metal alloy that developed while the nonferrous metal alloy was in the solid solution state;

(c) after the cooling step with the second liquid metal sodium, further cooling the nonferrous metal alloy with water and removing the liquid metal sodium left on the nonferrous metal alloy; and

(d) after the water cooling step, heating the nonferrous metal alloy according an aging process including keeping the nonferrous metal alloy at a temperature approximately between 100 degree C and 200 degree C for a certain time period.

2.-5. **(Canceled)**

6. **(Currently Amended)** The method according to claim 1, wherein, ~~the second temperature in the cooling step, the temperature of the liquid metal sodium is set such that the crystal structure of the nonferrous metal alloy is miniaturized while maintaining a~~

~~grating lattice~~ defect caused by transition in a crystal structure therein, and that the solid solution state is supersaturated.

7.-11. (Canceled)

12. (Currently Amended) The method according to claim 1, further comprising rolling the nonferrous metal alloy after the heating by step according to the aging process.

13. (Withdrawn) An apparatus for processing nonferrous metal alloy, comprising:

a first liquid metal sodium tub that stores liquid metal sodium at a first temperature and heats the nonferrous metal alloy to put the nonferrous metal alloy in a solid solution state;

a second liquid metal sodium tub that stores liquid metal sodium at a second temperature and cools the nonferrous metal alloy to suppress growth of a Guinier-Preston (G-P) zone in the nonferrous metal alloy while in the solid solution state; and

a carrier that carries the nonferrous metal alloy from the first liquid metal sodium tub to the second liquid metal sodium tub.

14. (Withdrawn) The apparatus according to claim 13, wherein the nonferrous metal alloy includes aluminum.

15. (Withdrawn) The apparatus according to claim 13, wherein the first temperature is set to generate a grating defect caused by transition in a crystal structure in the nonferrous metal alloy.

16. (Withdrawn) The apparatus according to claim 13, wherein the first temperature is set such that alloy element in the nonferrous metal alloy enters a solid solution state.

17. (Previously Presented - Withdrawn) The apparatus according to claim 15, wherein the first temperature is set to be more than or equal to 450°C.

18. **(Withdrawn)** The apparatus according to claim 13, wherein the second temperature is set such that the crystal structure of the nonferrous metal alloy is miniaturized while maintaining a grating defect caused by transition in a crystal structure therein, and that the solid solution state is supersaturated.

19. **(Withdrawn)** The apparatus according to claim 13, further comprising a water tub that cools the nonferrous metal alloy processed by the second liquid metal sodium tub.

20. **(Withdrawn)** The apparatus according to claim 19, wherein the water tub is used to remove liquid metal sodium left on the nonferrous metal alloy.

21. **(Withdrawn)** The apparatus according to claim 19, wherein the water tub is used such that the solid solution state of the nonferrous metal alloy stops growth of the G-P zone and a supersaturated solid solution is entered.

22. **(Withdrawn)** The apparatus according to claim 13, further comprising a heating tub that heats the nonferrous metal alloy by an aging process.

23. **(Withdrawn)** The apparatus according to claim 22, wherein the heating tub is used to keep the nonferrous metal alloy at a temperature approximately between 100°C and 200°C in a certain period.

24. **(Withdrawn)** The apparatus according to claim 22, further comprising a pressing machine that rolls the nonferrous metal alloy processed by the heating tub.

25. **(Withdrawn)** The apparatus according to claim 13, further comprising a liquid metal sodium circulating system that controls the temperature of the liquid metal sodium in each of the first liquid metal sodium tub and the second liquid metal sodium tub.

26. **(Withdrawn)** The apparatus according to claim 13, further comprising an inert gas supply source that covers the first liquid metal sodium tub and the second liquid metal sodium tub with inert gas.

27. **(Withdrawn)** The apparatus according to claim 19, further comprising:
a water cooling chamber having a further water tub,
a hydrogen remover that removes hydrogen in the water cooling chamber, and
a pressure fluctuation absorber that absorb the fluctuation of pressure in the water cooling chamber.

28. **(Withdrawn)** The apparatus according to claim 13, wherein the carrier includes a roller partially soaked in liquid metal sodium, the roller having a supporting mechanism that supports the rotating axis thereof such that the rotating axis is disposed above the liquid metal sodium.

29.-31. (Canceled)

32. **(Withdrawn)** An apparatus of processing nonferrous metal alloy, comprising:

a heating furnace that heats the nonferrous metal alloy such that nonferrous metal alloy is put in a solid solution state,

a liquid metal sodium tub that stores liquid metal sodium and cools the nonferrous metal alloy to suppress growth of a Guinier-Preston (G-P) zone in the nonferrous metal alloy while in the solid solution state, and

a carrier that carries the nonferrous metal alloy from the heating furnace to the liquid metal sodium tub.

33.-35. (Canceled)

36. **(Withdrawn)** The apparatus according to claim 16, wherein the first temperature is set to be more than or equal to 450°C.